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EXAMINER

ZIMMER, MARC S

ART UNIT PAPER NUMBER

1712

DATE MAILED: 06/21/2002

6

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/857,998

Applicant(s)

AWAKURA ET AL.

Examiner

Marc S. Zimmer

Art Unit

1712

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 June 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-15 and 17-20 is/are rejected.
- 7) ☒ Claim(s) 6 and 16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 8-10 and 18-20 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claims 8 and 18 disclose the utilization of a coupling agent for treating the magnetic powder that is dispersed throughout the silicone matrix. In this connection, they state that the SP value, or solubility parameter according to page 19 of the Specification, ranges from 6 to 10. However, it is not clear as to how this property is measured. It, furthermore, can only be assumed that this parameter is intended to reflect the solubility of said coupling agent specifically in a polysiloxane matrix. That is, the solubility parameter is believed to be an extrinsic property that is system dependent. Because the Applicants have admitted both in the Specification and in claim 9 that titanates, aluminates, and silane satisfy the SP value limitation recited in claim 8, it will be assumed for the purpose of evaluating the instant invention against the prior art that ALL compounds belonging to these general classes of compounds may be employed as said coupling agent. In any case, clarification is required.

Claim Rejections - 35 USC § 102

The application is directed to an electromagnetic wave absorbing polysiloxane elastomer into which a *soft* magnetic metal powder has been incorporated. It is noted for the record that the term “soft” may be taken to have multiple meanings. For instance, chemists sometimes use the word soft in reference to a metal that possesses high electron density and a low oxidation state. The term has also been employed as a descriptive term to delineate the chemical behavior of a metal as in, “soft metals prefer to bind with soft donor ligands”. “Soft” may also allude to a physical property such as the malleability of a metal. Finally, the word “soft” is commonly used to describe an article that is smooth or delicate in texture. Such a characteristic would be found in most metal powders, especially those that are ground to a fine grain.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in–

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1-3, 5, 7-10, 11-13, 15, and 17-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Suzuki et al., U.S. 2001/0051673. Suzuki et al. disclose an

electromagnetic radiation-absorbing liquid silicone rubber composition for preparing molded articles that may be used to suppress noise in electronic devices by converting the noise to heat energy that is easily emanated from said device. The composition comprises a polysiloxane elastomer that may be of the RTV type, addition-curing type or the peroxide-curing type (paragraph 19), a soft magnetic metal powder that optionally may be incorporated as flakes, or flat shape particles, with an aspect ratio as high as 20 (paragraphs 11 and 12), and a heat conducting material selected from silica, titania, a metal oxide, etc. (paragraph 15).

As for claims 8-10 and 18-20, Suzuki provides for the addition of a silane "wetter" that serves to improve the dispersion of the inorganic material within the host rubber. Although Suzuki is silent regarding the SP value of the wetting agents and, for that matter, the soft magnetic powder and rubber, this characteristic of said agents will be inherent for a particular polymer matrix. Insofar as the polymer materials into which the magnetic compound is dispersed are mirrored in the reference, the silanes mentioned therein will satisfy these limitations.

Claims 1-3 and 11-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Maeda et al., U.S. Patent # 6,284,363. Maeda, likewise, teaches an electromagnetic wave-absorbing silicone "gel" that may be hardened into a rubber in a press-molding process (column 4, lines 52-53) for manufacturing bodies that attenuate the magnetic wave emissions produced by an electronic device. As before, the gel is comprised of a condensation- or addition-curable polysiloxane (column 4, lines 48-51), a soft magnetic metal such as Mn-Zn ferrite (column 3, lines 54-57), and a thermally-conducting filler

selected from various metal oxides, aluminum nitride and silicon carbide (column 3, lines 65-67 through column 4, lines 1-5).

Claims 1-4 and 11-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Watanabe et al., JP 06-001064 in view of Smithells Metal Reference Book, chapter 10. They disclose a silicone composition having beneficial heat conductivity and electromagnetic containment properties comprising (i) 100 parts by weight of a polyorganosiloxane, (ii) 2-1000 parts by weight of a heat conducting filler, (iii) 5-1000 parts by weight a low-melting metal alloy powder capable of shielding against electromagnetic radiation, and (iv) an electroconductive filler.

As for component (ii), Junichiro states in paragraph 6 that the thermally conducting material may be selected from metallic compounds including boron nitride, alumina, alumina nitride, zinc white, but preferably is silica. Component (iii), the radiation-absorbing component, is chosen from one of numerous alloys that are known to melt at comparatively low temperatures such as Lichtenberg alloy, Rose's metal, Wood's metal, Hamburg alloy, and others (paragraph 7). These alloys, which are based primarily on tin and lead according to the reference, are characterized by Smithells Metals Reference as soft hence this aspect of the claimed invention is also satisfied.

Component (iv) is responsible for conferring good heat-transfer characteristics to the composition and is typically a form of carbon selected from carbon black, graphite, or carbon fiber (paragraph 9).

It is acknowledged that the Examiner has employed a plurality of references in making a statement of anticipation under 35 U.S.C. 102. Normally, only one reference

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should be used in making a rejection under this statute. However, a 35 U.S.C. 102 rejection over multiple references has been held to be proper (MPEP 2131.01) when the extra references are cited to:

- (A) Prove the primary reference contains an "enabled disclosure;"
- (B) Explain the meaning of a term used in the primary reference; or
- (C) Show that a characteristic not disclosed in the reference is inherent.

Clearly, the latter reference is invoked only to affirm the Examiner's belief that these metal's are inherently soft despite Junichiro's failure to expressly point out this property.

Finally, it is contemplated that the composition described by Junichiro would be useful for the protection of electronic parts in paragraph 12 from heat build-up and electromagnetic waves.

Claims 1-3 and 11-13 are rejected under 35 U.S.C. 102(a) as being anticipated by Takoaka, JP 2001-044687. Takoaka discloses an electromagnetic suppression composition featuring a liquid silicone rubber (paragraph 19) and an iron based magnetic alloy such as Fe-Si-Al (paragraph 25). In other embodiments, the addition of adjuvants including thermally-conductive fillers, antioxidants and reinforcing materials is contemplated. Among the reinforcing fillers mentioned are silica and silicates of aluminum or calcium (paragraph 29). The heat-conducting compounds are typically metal oxides including magnesium- or titanium oxide. The primary problem to be solved by Takoaka was that of poor dispersion of the magnetic materials into the polyorganosiloxane matrix which was addressed by further incorporating a solvent that could be subsequently removed such as toluene.

Claims 1, 2, 5, 11, 12, and 15 are rejected under 35 U.S.C. 102(a) as being anticipated by Kobayashi, JP JP 2000-174880 A. Kobayashi discloses a magnetic flake-filled composition used for the manufacture of electromagnetic wave-shielding sheets (paragraph 11) comprising a mixture of silicone rubber and "fire-resistant" silicone rubber; it is not indicated what renders the latter silicone more flame-resistant than the former but it is presumed that the substitution patterns on the respective siloxane backbones are different, in a ratio of 9:1 to 5.5:1. Magnetic particles such as a ferrite or flat iron (paragraph 14) are added to impart the wave shielding effect. The magnetic material is mulled, or dispersed, into the silicone rubber blend in an amount corresponding to 300 to 400 weight parts relative to 100 weight parts of said blend.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8-10, and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi, JP JP 2000-174880 A in view of Ota et al., JP 2000-101284. Kobayashi does not disclose the treatment of the ferrite particles with a silane coupling agent. Ota et al., on the other hand, disclose yet another electromagnetic wave-absorbing body containing a soft electromagnetic filler that has been treated with a silane. They reveal in paragraph 5, however, that these soft metal materials are often not easily dispersed into an elastomer. For this reason, they recommend in paragraphs

14 and 15 that the filler particles be treated with a silane prior to adding them to one of numerous polymer materials known to be useful for making electromagnetic wave-shielding bodies including various thermoplastics and synthetic rubbers (paragraph 23). One of ordinary skill will appreciate that said synthetic rubbers would include siloxane rubbers especially considering their apparent widespread use in this technology.

Although Ota is silent regarding the SP value of the wetting agents and, for that matter, the soft magnetic powder and rubber, this characteristic of said agents will be inherent for a particular polymer matrix. Insofar as the polymer materials into which the magnetic compound is dispersed are mirrored in the reference, the silanes mentioned therein will satisfy these limitations.

Allowable Subject Matter

Claims 6 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. While it is recognized that the magnetic powder fulfills the role of mitigating the penetration of electromagnetic radiation, none of the aforementioned references indicate that the surface area of the particles is particularly crucial.

Priority

It is noted that the publication dates of several of the above documents do not precede Applicant's priority date. However, Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Conclusion

The International Search Report emphasized the Japanese patent 10-092623 as being particularly relevant to the instant invention however nowhere therein is the utilization of a silicone rubber as the host matrix contemplated. Shigeta et al., JP 02-034599 A is of interest for its disclosure of a method for improving the dispersibility of magnetic materials by regulating several variables. It could not be ascertained from the abstract if said materials were to be blended into a polysiloxane matrix from the abstract. As such, the document has been submitted for translation and its relevance to the instant invention will be further addressed in a subsequent correspondence.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc S. Zimmer whose telephone number is 703-605-1176. The examiner can normally be reached on Monday-Friday 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Dawson can be reached on 703-308-2340. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

June 14, 2002



Robert Dawson
Supervisory Patent Examiner
Technology Center 1700